

Appl. No. 10/695,236
Amdt. dated July 11, 2005
Reply to Office action of April 19, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

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Listing of Claims:

Claim 1. (currently amended): A flow cell comprising:

10 a substrate having at least one sample channel and integral with at least one optical fiber channel holder;

wherein each sample channel has a curved portion to deliver fluid to an isolated sensing area;

15 wherein each optical fiber channel holder has at least one an optical fiber disposed within each optical fiber channel holder therein, wherein each optical fiber has at least one grating and wherein each optical fiber is precisely aligned and tensioned in a straight line within each optical fiber channel holder;

wherein the isolated sensing area is defined as an area where each optical fiber grating is in contact with proximate to the curved portion of each sample channel; defining a sensing area; and

20 at least one sample port positioned in an operable relationship to at least one sample channel.

Claim 2 (canceled)

25 Claim 3 (original): A flow cell according to claim 1, wherein the substrate has a monolithic structure.

Claim 4 (original): A flow cell according to claim 3, wherein the monolithic structure is either a cylinder or a planar structure.

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Claim 5 (original): A flow cell according to claim 1, wherein the substrate comprises at least two mating pieces.

5 Claim 6 (original): A flow cell according to claim 5, wherein a plurality of mating pieces form a kit having interchangeable parts whereby the configuration of the flow cell is modified.

10 Claim 7 (original): A flow cell according to claim 5, wherein the mating pieces form either a cylinder or a planar structure.

Claim 8 (original): A flow cell according to claim 1, further comprising at least one sample outlet positioned in an operable relationship to at least one sample channel.

15 Claim 9 (original): A flow cell according to claim 8, wherein the substrate has a monolithic structure.

Claim 10 (original): A flow cell according to claim 9, wherein the monolithic structure is either a cylinder or a planar structure.

20 Claim 11 (original): A flow cell according to claim 8, wherein the substrate comprises at least two mating pieces.

25 Claim 12 (original): A flow cell according to claim 11, wherein a plurality of mating pieces form a kit having interchangeable parts whereby the configuration of the flow cell is modified.

Claim 13 (original): A flow cell according to claim 11, wherein the mating pieces form either a cylinder or a planar structure.

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Claim 14 (original): A flow cell according to claim 1, wherein the flow cell comprises one sample port and a plurality of sample channels.

5 Claim 15 (original): A flow cell according to claim 1, wherein the flow cell comprises a plurality of sample ports and one sample channel.

Claim 16 (original): A flow cell according to claim 8, wherein the flow cell comprises one sample port, a plurality of sample channels, and one sample outlet.

10 Claim 17 (original): A flow cell according to claim 8, wherein the flow cell comprises one sample port, a plurality of sample channels, and a plurality of sample outlets.

15 Claim 18 (original): A flow cell according to claim 8, wherein the flow cell comprises a plurality of sample ports, one sample channel, and one sample outlet.

Claim 19 (original): A flow cell according to claim 8, wherein the flow cell comprises a plurality of sample ports, one sample channel, and a plurality of sample outlets.

20 Claim 20 (original): A flow cell according to claim 8, wherein the flow cell has 2 sample channel ports.

Claim 21 (original): A flow cell according to claim 8, wherein the flow cell has 8 sample channel ports.

25 Claim 22 (original): A flow cell according to claim 8, wherein the flow cell has 96 sample channel ports.

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Claim 23 (original): A flow cell according to claim 8, wherein the flow cell has 384 sample channel ports.

5 Claim 24 (original): A flow cell according to claim 8, wherein the flow cell has 1536 sample channel ports.

Claim 25 (original): A flow cell according to claim 8, wherein each sample channel is spaced apart a distance of less than or about 9mm.

10 Claim 26 (original): A flow cell according to claim 8, wherein the flow cell is microtiter plate compatible.

15 Claim 27 (original): A flow cell according to claim 1, wherein each sample port has a means to control delivery of the sample into each sample channel.

Claim 28 (original): A flow cell according to claim 27, wherein the means to control delivery of the sample into each sample channel is by aspiration.

20 Claim 29 (original): A flow cell according to claim 27, wherein the means to control delivery of the sample into each sample channel is by a continuous flow.

Claim 30 (original): A flow cell according to claim 27, wherein the means to control delivery of the sample into each sample channel is by a continuous flow with dwell time.

25 Claim 31 (original): A flow cell according to claim 8, wherein each sample port has a means to control delivery of the sample into each sample channel.

Claim 32 (original): A flow cell according to claim 31, wherein the means to control delivery of the sample into each sample channel is by aspiration.

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Claim 33 (original): A flow cell according to claim 31, wherein the means to control delivery of the sample into each sample channel is by a continuous loop.

5 Claim 34 (original): A flow cell according to claim 31, wherein the means to control delivery of the sample into each sample channel is by a continuous flow.

Claim 35 (original): A flow cell according to claim 31, wherein the means to control delivery of the sample into each sample channel is by a continuous flow with dwell time.

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Claim 36 (original): A flow cell according to claim 8, wherein the sample is selected from the group consisting of: a liquid sample; a gas sample; and a complex sample.

15 Claim 37 (original): A flow cell according to claim 1, wherein the grating is a long period grating.

Claim 38 (currently amended): A flow cell according to claim 37, wherein a ~~reacting~~ reactive coating is positioned in an operable relationship to the long period grating.

20 Claim 39(original): A flow cell according to claim 1, wherein the grating is a Bragg grating.

Claim 40 (original): A flow cell according to claim 8, wherein the grating is a long period grating.

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Claim 41 (original): A flow cell according to claim 40, wherein a reactive coating is positioned in an operable relationship to the long period grating.

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Claim 42 (original): A flow cell according to claim 8, wherein the grating is a Bragg grating.

Claims 43 – 50 (canceled)

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Claim 51 (currently amended): A flow cell kit comprising an upper substrate having at least one curved sample channel for delivering a sample to an isolated sensing area and at least one sample port disposed therein; at least one optical fiber channel holder having at least one an optical fiber disposed therein wherein each optical fiber has ~~having a~~ at least
10 one grating disposed therein wherein each optical fiber is precisely aligned and tensioned
in a straight line within each optical fiber channel holder; wherein the optical fiber channel holder has a means to connect to the upper substrate to form a unit wherein the
isolated sensing area is defined as an area where the grating is proximate to the curved
portion of the sample channel; and a lower substrate having a means to connect to the
15 optical fiber channel holder on a side opposite from the upper substrate.

Claim 52 (currently amended): A flow cell kit according to claim 51, wherein the upper and lower substrates each have a means to interconnect with each other to form an array.

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Claim 53 (new): A flow cell according to claim 12, comprising an upper section having at least one sample channel and at least one sample port; a middle section comprising an optical fiber channel holder having an optical fiber disposed therein; a lower section serving as a support base; wherein the upper section and the lower section are counter-sunk to permit critical alignment of the optical fiber channel holder with each sample
25 channel.